

Appl. No. 09/661,481
Amdt. dated September 14, 2003
Reply to Office action of March 14, 2003

In the Claims:

1. (currently amended) A gas laser apparatus emitting ultraviolet radiation, comprising:

a laser chamber;

a magnetic pulse compression circuit; and

a pair of laser discharge electrodes connected to output terminals of said magnetic pulse compression circuit and disposed in said laser chamber, ~~adapted for a discharge oscillating current flowing between the discharge electrodes,~~

wherein a laser oscillating operation is performed by a first half-cycle of half-cycle and at least one half-cycle subsequent to the first half-cycle of a discharge oscillating current waveform of one pulse in which a polarity is reversed, together with at least one half-cycle subsequent to the first half-cycle,

wherein said discharge oscillating current flows between the discharge electrodes.

2. (original) A gas laser apparatus emitting ultraviolet radiation according to claim 1, which is an ArF excimer laser apparatus, wherein said magnetic pulse compression circuit has:

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a series circuit including a first magnetic switch and
a first capacitor;

a second capacitor connected to both ends of said
series circuit; and

a second magnetic switch connected at one end thereof
to a junction between said first magnetic switch and said
second capacitor;

wherein the other end of said second magnetic switch
and the other end of said second capacitor constitute said
output terminals;

wherein when a capacitance of said second capacitor is
12 to 16 nF, and a capacitance of a peaking capacitor of
said laser apparatus that is connected between said output
terminals in parallel to said pair of laser discharge
electrodes is 10 to 16 nF, and further an inductance of a
circuit loop formed by said peaking capacitor and said pair
of laser discharge electrodes is 5 to 8 nH, and further a
distance between said pair of laser discharge electrodes is
15 to 20 mm, and further a partial pressure of fluorine in
said laser chamber is less than 0.12% of a total pressure of
a laser gas,

a rise time required for a voltage applied between said
pair of laser discharge electrodes to reach a voltage at
which breakdown occurs is not more than 80 ns.

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3. (original) A gas laser apparatus emitting
ultraviolet radiation according to claim 2, wherein the
voltage at which breakdown occurs between said pair of laser
discharge electrodes is from 18 to 28 kV, and said rise time
of the voltage is not less than 40 ns.
